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# NOTES ON THE *CORDIA PANAMENSIS* COMPLEX (BORAGINACEAE) AND A NEW SPECIES FROM COLOMBIA

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*Cordia* is a large pantropical genus of about 300 species, divided by most recent authors into six sections (Nowicke & Miller, in press). Section *Myxa*, with over 150 species, is the largest in the Neotropics and includes all but one of the paleotropical species (Miller, 1985). It is difficult taxonomically because most of the groups that can be recognized within the section have obscure boundaries.

One such group is the *Cordia panamensis* Riley group (Miller, 1985), which is widespread in Central America, the West Indies, and northern South America. This group is particularly problematic in terms of its definition within sect. *Myxa*, as well as species delimitations within it. It is loosely defined and may very well not be monophyletic, yet the species all share a similar appearance and are often confused in herbaria. The *C. panamensis* group is characterized by ovate to lanceolate, scabrous to scabrid, usually anisophyllous leaves that generally dry brown. All of the species except *C. anisophylla* J. S. Miller are dioecious. Perhaps *C. bicolor* A. DC. and *C. sellowiana* Cham. should be included, but *C. bicolor* does not dry brown, and both species differ in being homostylous.

Sculpturing on the surface of the endocarps

appears to be useful in distinguishing species of *Cordia* sect. *Myxa* (Miller, in prep.) but has not yet been used for this. Dried fruits of various species of the *C. panamensis* group were soaked in 5% NaOH for two days to soften the exocarp and mesocarp, then washed in running water to remove outer tissues and expose the cleaned, outer surface of the endocarp. *Cordia gentryi* has an endocarp with raised, quadrangular areas (Fig. 1C); in *C. anisophylla* the raised areas are much longer (Fig. 1D). Other members of the group have rugulose (*C. panamensis*, Fig. 1E) to spinulose (*C. hebeclada* I. M. Johnston, Fig. 1F) endocarps.

Recent studies of members of the *C. panamensis* group have helped clarify the relationships of species in Central America (Miller, 1985, 1988) and Venezuela (Gaviria, 1987). The group is defined here as consisting of ten species, but problems still exist with differentiating *C. panamensis* and *C. macrophylla*. I have seen little material of *C. macrophylla* and have maintained it as separate following Johnston (1949). As part of a review of the *C. panamensis* group, several novel collections from Pacific coastal Colombia appear to represent an undescribed species.

## KEY TO THE SPECIES OF THE *CORDIA PANAMENSIS* GROUP

- 1a. Leaf apices acute to obtuse.
  - 2a. Stems, petioles, and inflorescence branches with echinate hairs ..... *C. cymosa* (J. D. Smith) Standley
  - 2b. Stems, petioles, and inflorescence branches with simple hairs.
    - 3a. Petioles longer than 15 mm; twigs puberulent to strigillose; South America ..... *C. tetrandra* Aubl.
    - 3b. Petioles shorter than 15 mm; twigs velutinous to hirsute; West Indies ..... *C. sulcata* DC.
- 1b. Leaf apices acuminate to caudate.
  - 4a. Twigs strigillose, the hairs appressed, short, white or translucent.
    - 5a. Flowers distylous; corollas longer than 10 mm; mature fruits ellipsoid, longer than 8 mm .....  
..... *C. anisophylla* J. S. Miller
    - 5b. Flowers dioecious; corollas shorter than 5 mm; mature fruits ovoid, shorter than 8 mm .....  
..... *C. sericalyx* DC.
  - 4b. Twigs with erect or curly hairs or densely short-velutinous, or if strigillose, the hairs brown.
    - 6a. Leaf apices caudate; mature fruits longer than 14 mm, glabrous ..... *C. gentryi* J. S. Miller
    - 6b. Leaf apices acuminate; fruits shorter than 14 mm or puberulent.
      - 7a. Branches of the inflorescences ferruginous-tomentose; fruits puberulent ..... *C. toqueve* Aubl.
      - 7b. Branches of the inflorescence velutinous to hirsute; fruits glabrous.
        - 8a. Stems hirsute to hispid.
          - 9a. Twigs shaggy-velutinous; Jamaica ..... *C. macrophylla* L.
          - 9b. Twigs hirsute; Mexico to South America, Trinidad, and Tobago ..... *C. panamensis* Riley



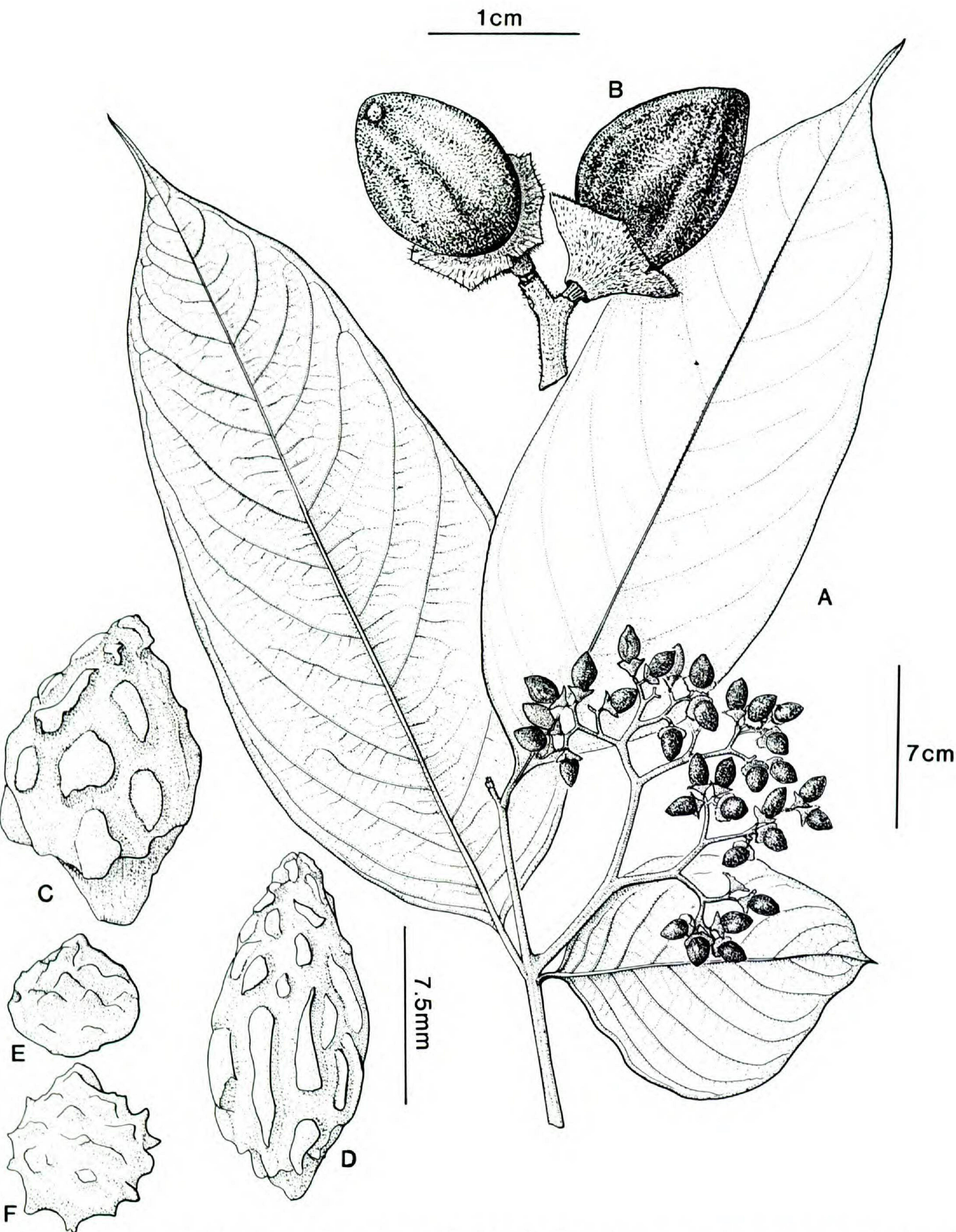


FIGURE 1. A–C. *Cordia gentryi* (Gentry et al. 17874 (MO), Colombia). — A. Fruiting branch. — B. Fruits with persistent calyces. — C. Dorsal view of endocarp. — D. *Cordia anisophylla* (Mori & Kallunki 6373 (MO), Panama), dorsal view of endocarp. — E. *Cordia panamensis* (Miller & Miller 961 (MO), Panama), dorsal view of endocarp. — F. *Cordia hebeclada* (Gentry et al. 19686 (MO), Peru), dorsal view of endocarp.

- 8b. Stems pubescent to densely short velutinous.
- 9a. Fruits white; twigs hirsute to velutinous; upper leaf surface scabrous; West Indies ..... *C. sulcata* DC.
- 9b. Fruits yellow; twigs short and evenly golden brown velutinous; upper leaf surface glabrous to scabrid; Colombia, Ecuador, Peru ..... *C. hebeclada* I. M. Johnston



***Cordia gentryi*** J. S. Miller, sp. nov. TYPE: Colombia. El Valle: Bajo Calima, Dindo area, 100 m, 11 July 1984, *A. Gentry, M. Monsalve & D. Wolfe* 47874 (holotype, MO 3521285).

Arbor ad 8 m alta, ramunculis dense strigillosis ad puberulentis. Folia persistentia, petiolis 1.7–2.6 mm longis; laminae anisophyllae, folia maioribus ovatis, 30–35.3 cm longis, 10.7–13 cm latis, apice caudatis, basi obtusis, minoribus orbicularis, superficie scabrida, pagina inferiore grosse pubens. Flores ignoti. Fructus drupaceus, aurantiacus, endocarpo osseo, inaequilateraliter ovoideo, 16 mm longo, 10 mm lato.

Tree 8 m tall, the twigs densely puberulent with erect, brown hairs. Leaves persistent, dimorphic; petioles 1.7–2.6 mm long, canaliculate adaxially, puberulent, with erect, brown hairs; the larger blades narrowly ovate, 30–35.3 cm long, 10.7–13 cm wide, the apex caudate, 3–4 cm long, the base obtuse; smaller blades orbicular, 11–15.5 cm long, 9.5–14 cm wide, the apex abruptly short acuminate, the base rounded to acute, both types with the margin entire, the upper surface scabrous, the hairs translucent, appressed, the midrib raised, puberulent, the lower surface coarsely pubescent, with 6–10 pairs of secondary veins. Flowers unknown. Infructescence broadly cymose, ca. 13 cm broad. Fruits drupaceous, orange-yellow, the fruiting calyx slightly accrescent, unevenly 5-lobed, 9–11 mm broad, appearing torn along the margin, uniformly strigillose, somewhat sericeous inside, the mesocarp mucilaginous, the endocarp bony, inequilaterally ovoid, 16 mm long, 10 mm broad, the surface reticulate with raised quadrangular areas.

*Distribution.* *Cordia gentryi* is known from the Colombian provinces of Chocó and El Valle at elevations below 100 m in wet tropical forests.

*Additional specimens examined.* COLOMBIA. CHOCÓ: area of Baudó, on the right side of Río Baudó, about 13 km upstream from the estuary of Quebrada Carpio and the shore opposite Quebrada Cola Barquita, 11 Feb. 1967, *Fuchs & Zanella* 21294 (MO). EL VALLE: Bajo Calima, ca. 10 km N of Buenaventura, Cartón de Colombia concession, transition between tropical wet and pluvial forest, ca. 50 m, 10 Dec. 1981, *Gentry* 35508 (MO).

*Cordia gentryi* is most easily distinguished by its caudate leaf apex and large, orange-yellow fruits. It most resembles *C. panamensis* and *C. anisophylla* J. S. Miller. *Cordia panamensis* differs in having hirsute twigs and white fruits shorter than 7.5 mm. *Cordia anisophylla* differs in having thinner ellipsoid fruits 6–7.5 mm broad and less-prolonged leaf apices.

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